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The Decoupling of Marriage and Parenthood? Trends in the Timing of Marital First Births, 1945–2002

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Abstract

Family formation changed dramatically over the twentieth century in the United States. The impact of these changes on childbearing has primarily been studied in terms of nonmarital fertility. However, changes in family formation behavior also have implications for fertility *within* marriage. We use data from ten fertility surveys to describe changes in the timing of marital childbearing from the 1940s through the 21st century for non-Hispanic white and non-Hispanic black women. Based on harmonized data from the Integrated Fertility Survey Series, our results suggest increasing divergence in fertility timing for white women. A growing proportion of marriages begin with a premarital conception; at the same time, an increasing proportion of white women are postponing fertility within marriage. For black women, marital fertility is increasingly postponed beyond the early years of marriage. Evaluating the sequencing of marriage and parenthood over time is critical to understanding the changing meaning of marriage.

Keywords

family formation; fertility; marriage; trends

Dramatic changes in family formation behavior occurred over the second half of the 20th century. These shifts, and their implications for child and adult well-being, are well-documented (e.g., Cherlin, 2010; Ellwood & Jencks, 2004; McLanahan, 2004; Smock & Greenland, 2010). Americans are marrying later, and more are remaining unmarried; divorce rates have increased; nonmarital cohabitation has become more common; more women are remaining childless; and the proportion of births taking place to unmarried women continues to rise. Some of these trends appear to have run their course – for example, divorce rates

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have plateaued since the 1980s (Raley & Bumpass, 2003) – but others, such as the increase in cohabitation and nonmarital childbearing, continue. Many of these trends have been particularly pronounced among less-educated women (Ellwood & Jencks, 2004; Martin, 2004; Smock & Greenland, 2010).

As part of these changes, marriage and parenthood have been increasingly decoupled, both behaviorally and normatively. This decoupling has primarily been studied in terms of increased childbearing outside of marriage; research on nonmarital fertility sheds light on both the meaning of marriage and the meaning of childbearing (e.g., Edin & Kefalas, 2005; Gibson-Davis, Edin, & McLanahan, 2005). In this article, in contrast, we seek to understand the possible ramifications of family change for fertility behavior *within* marriage. Although the proportion of children born outside of marriage has increased rapidly, it is still the case that the majority of births – 59.0% of all births in 2011 – occur among married women (Martin, Hamilton, Ventura, Osterman, & Mathews, 2013), and rates of marriage and marital fertility can have a substantial impact on population-level patterns of childbearing (e.g., Hayford, 2013). Further, the U.S. has higher marriage rates than other countries, and most Americans eventually marry (Cherlin, 2009), suggesting that marriage still provides some perceived benefits that other union types lack. Thus, the failure to examine and understand trends in marital fertility as well as nonmarital fertility represents a key gap in current knowledge about both childbearing and the changing role of marriage.

To address this gap, we use data from ten fertility surveys spanning six decades, harmonized into a single resource, the Integrated Fertility Survey Series (IFSS), to describe changes in the timing of marital fertility over the second half of the 20th century. We explore trends in the interval between marriage and the first marital birth for black and white women, with particular attention to births in the first months of marriage (i.e., births resulting from premarital conceptions), accounting for changes in age at marriage, the educational attainment of married women, and premarital fertility over the time period studied. Our focus on childbearing, which once took place almost solely within marriage, will help to illuminate the changing meaning of marriage and childbearing, and the link between them, over a long historical period.

The changing nature of marriage

Cherlin (2004) describes changes in family formation behavior over the late 20th century as indicative of the “deinstitutionalization of marriage.” The institutionalized marriage described by the structural-functionalists of the 1950s combined multiple functions into a single relationship: the regulation of sexual behavior; the organization of care, support, and legal recognition for children; the distribution of paid and domestic labor; and the provision of intimacy and emotional support (Thornton, Axinn, & Xie, 2007). In contemporary individualized family systems, in contrast, these functions are neither unique to marriage nor necessary for marriage. In particular, sex and childbearing outside of marriage have become widespread, underscoring that the role of marriage in regulating sexual behavior and childbearing has weakened.

These shifts in the functions of marriage were part of a larger set of social transformations valorizing individual rights and freedoms, including the sexual revolution, second wave feminism, and the gay rights movement (cf. Lesthaeghe, 2010; van de Kaa, 1987). Rather than a social contract or a prescribed marker of adulthood, marriage is increasingly understood as a relationship defined by and for individual needs, and decisions to marry or divorce are subject to individual decision-making rather than social pressures or legal restrictions. In addition to ideological shifts, changes in economic conditions and technological and legal advances in family planning have made marriage less necessary. As their educational attainment and labor force participation levels have increased, women are increasingly able to financially support themselves and their children, weakening the economic basis of marriage and potentially reducing the need for women to marry as well as altering fertility behavior within marriage (Becker, 1981; Brewster & Rindfuss, 2000). The development of the birth control pill in the 1960s and the legalization of abortion in the 1970s made it easier to limit fertility and control the timing of childbearing, allowing couples to engage in nonmarital sex without the fear of pregnancy and to postpone childbearing within marriage (Goldin & Katz, 2002; Westoff, 1975).

Despite its declining institutional functions, marriage continues to have high social value in the United States. Most never-married Americans want to marry (Manning, Longmore, & Giordano, 2007; Pew Research Center, 2010; Thornton & Young-DeMarco, 2001), and the large majority of American adults will marry at some point in their lives (Goldstein & Kenney, 2001). Similarly, although rates of childbearing outside of marriage have increased, most Americans believe that marriage is the *most* appropriate setting for raising children (Pew Research Center, 2010; Thornton & Young-DeMarco, 2001). The challenge for family scholars, then, is to understand the meaning of marriage in an individualized marriage regime and why people continue to marry.

We suggest that the timing of childbearing relative to marriage over the latter half of the 20th century provides a valuable lens for studying the changing meaning of marriage. There are two possible hypotheses regarding the timing of fertility within marriage. First, childbearing within marriage might be delayed. The increasing emphasis on marriage as an intimate relationship focused on the happiness of the couple might lead couples to want to spend time together without children to solidify their relationship, and the weakening of the normative link between marriage and childbearing means that couples are no longer expected to have children soon after marrying. Furthermore, the high economic and opportunity costs of childbearing, particularly for well-educated women, combined with improvements in the availability and effectiveness of contraception, would facilitate the delay of marital fertility; in fact, the increasing prevalence of childlessness suggests some couples forego childbearing altogether (Hayford, 2013).

Second, childbearing might take place earlier in marriage. As more couples are dating or cohabiting for long periods prior to marriage (Bumpass & Lu, 2000; Duncan & Phillips, 2010; Kennedy & Bumpass, 2008; Strohm et al., 2009), the belief that marriage is the preferable setting for childbearing might be one of the few remaining incentives to marry rather than cohabit. This incentive appears to be stronger for whites and those with high levels of education than other groups (Lichter, 2012; Smock & Greenland, 2010). Couples

who delay marriage until they plan to have children would be likely to have children shortly after marriage; these processes might even produce a rise in the proportion of marriages that begin during pregnancy if couples wait for a pregnancy to marry. Although the proportion of nonmarital conceptions that result in marriage before the birth has declined over time (England, Shafer, & Wu 2012; Raley, 2001), the rising number of nonmarital conceptions (particularly those within cohabitation) and the decline in other reasons to marry, besides childbearing, may result in an increase over time in post-conception marriages as a proportion of all marriages. In addition, as the average age at marriage increases and approaches the age at which women's fecundity begins to decline, biological pressures might also push couples to have children soon after marriage.

Although these two hypotheses propose opposite patterns of change, it is possible that both hypotheses could be supported under different circumstances or for different groups. For instance, we might observe delayed childbearing within marriage for some subgroups, but a shorter interval between marriage and first birth for other groups. Additionally, both hypotheses are consistent with research on normative and behavioral change related to marriage and childbearing.

For example, descriptive analyses show an overall lengthening of the interval between marriage and first birth between 1980 and 2010 (Payne, 2012), but the past few decades have witnessed large shifts in the characteristics of married individuals, and these shifts may have implications for changes in marital fertility. The average age at marriage has increased steadily for both men and women since 1950, when median marriage age reached a historical low of just over twenty years for women (Cohn et al., 2011; Fitch & Ruggles, 2000). In addition, marriage has become increasingly selective of the financially stable and highly educated, and the average education level of recently married women has increased as college-educated women have become more likely to marry than those with lower levels of education (Fry, 2010) – consistent with Furstenberg's (1996) notion of marriage as a "luxury good" and cohabitation as a less preferable, "budget way" to start a family. However, increasing rates of nonmarital fertility (both within and outside of cohabitation) have also likely produced rising proportions of women who already have children when they first marry. Indeed, beginning in 1991, the average at first marriage exceeded the average age at first birth (Arroyo et al., 2012). While marriage rates among women with nonmarital births have declined (Gibson-Davis, 2012; Graefe & Lichter, 2008), the large number of women with nonmarital births means that mothers constitute an increasing proportion of those who marry.

These changes in the population of married people are likely to be associated with changes in marital fertility, but the direction of associations is unclear, as is the extent to which these compositional shifts may complement, contradict, or offset each other. For instance, there are several possible associations between the changing age at marriage and changes in the timing of marital fertility. Typically, first birth rates have been highest among women in their late teens and early twenties, but trends in the age at first birth have mirrored trends in the age at first marriage (Arroyo et al., 2012; Mathews & Hamilton, 2009). Thus, it is possible that the interval between first birth and marriage has remained stable as age at first marriage has changed. Alternatively, as marriage is delayed, women may feel social and/or

biological pressures to have children soon after marriage, reducing the interval between marriage and first birth. Finally, if marriage is postponed to ages at which women's fecundity begins to decline, the interval between marriage and first birth might increase due to challenges in conceiving. However, we believe this mechanism likely plays a minor role in current fertility because the median age at first marriage for women at the start of the 21st century was around age 25, well below the age at which fecundity begins to decline substantially (Fitch et al., 2012; Menken, Trussell, & Larsen, 1986).

As with age, there are multiple possibilities relating premarital childbearing and marital fertility. For instance, childbearing before marriage might slow marital fertility if women have already reached their desired parity. Conversely, children from a prior union could speed up marital fertility if women want to maintain short birth intervals (Meggiolaro & Ongaro, 2010). Another possibility is that premarital childbearing might not affect marital fertility if childbearing is primarily determined by the desire for shared biological children (e.g., Griffith et al., 1985; Thomson, 2004; Thomson et al., 2002). Education, another important factor in our analysis, is negatively associated with birth rates on average. But this association is due in part to the large educational differentials in marriage and nonmarital fertility, suggesting that educational differentials in marital fertility might be modest (Rindfuss & Parnell, 1989; Livingston & Cohn, 2010). Existing descriptive evidence finds that, among women married between 2000 and 2010, more educated women have slightly longer intervals between marriage and first birth, but this research does not account for the older average age at marriage among more educated women (Payne, 2012).

There are also racial differences in the composition of married women, with differences growing over time. During the first half of the 20th century, blacks married at higher rates than whites, but among those born in the 1940s and 1950s, marriage rates, though declining for all, declined more dramatically for blacks than whites (Stevenson & Wolfers, 2007). The sharper decline in marriage among black women in recent cohorts suggests selectivity is greater for black women than white women, with black women marrying at substantially older ages than white women (Elliott et al., 2012). Between 1950 and 2000, the proportion ever-married increased among whites until around age 30, leveling off after that point; for blacks, age 30 seems less of transition age, with the proportion married consistently increasing with age beginning in 1980 (Isen & Stevenson, 2011). Further, the positive association between education and marriage is greater for blacks than whites (Goldstein & Kenney, 2001). At the same time, black women are far more likely to have children outside of marriage (Martin et al., 2013) and thus to bring children with them into their first marriage. Thus, selection plays much more of a role for marriage and marital fertility among blacks than whites.

Overall, we expect that marital fertility will exhibit distinct and contradictory changes during the latter half of the 20th century, as rising individualism has shifted expectations of marriage and decreased pressures to have children. More married women will experience long intervals between marriage and childbearing, but, simultaneously more marriages will also be followed closely by a birth (i.e., more marriages will begin with a premarital conception), with these two trends reflecting a shift away from a common average duration to first birth among all married women toward a bimodal distribution.

Data and methods

Data, measures, and sample

Data come from the Integrated Fertility Survey Series (IFSS), a harmonized dataset combining data from ten surveys of fertility and family behavior conducted in the United States between 1955 and 2002. The component surveys are the Growth of American Families (GAF) surveys of 1955 and 1960; the National Fertility Surveys (NFS) of 1965 and 1970; and the National Surveys of Family Growth (NSFG) of 1973, 1976, 1982, 1988, 1995, and 2002. All surveys are nationally representative, but the populations represented vary; Table 1 presents the sampling frames and sample sizes of each survey. The IFSS compiles data from all surveys and harmonizes the original data, including weights and survey design variables, into comparable formats. The variables used in this study are primarily simple sociodemographic characteristics; for these variables, harmonization is straightforward and requires little more than creating comparable labels and formats. We describe the harmonization of the variables we use below. Harmonized IFSS data, as well as details on the harmonization process for other variables, are available online at <http://www.icpsr.umich.edu/icpsrweb/IFSS/>.

The primary measures used in this study, timing of first marriage and first marital birth, are fully comparable across surveys. Although the completeness of marital histories collected in the IFSS component surveys varies, all collect start and end dates of first marriages. The only challenge to comparability of these measures is the limited sampling frames of the early surveys. The 1955 GAF and the 1965 NFS interviewed only currently married women (aged 18–39 and 18–54, respectively) and the 1960 GAF was focused on currently married women (aged 18–39) with a smaller sample of previously married women (aged 23–44) living with a spouse in 1955. Previously married women were included in the sample frames starting with the 1970 NFS (still restricted to women 18–44), and single women with children in the household were interviewed starting with the 1973 NSFG. All the NSFG surveys include women 15–44, but the universe differed by marital and parental status across cycles. A representative sample of all women of reproductive age, not limited by marital status or previous fertility, was not interviewed until the 1982 NSFG. Also important is that the 1955 GAF includes only white women, and Hispanic ethnicity is not measured in the GAF or NFS surveys. These restrictions pose limitations for analyses. For example, because never-married women were not interviewed in the early surveys, it is not possible to consider change over time in selection into marriage or the proportion of nonmarital conceptions resulting in a marital birth. In addition, the time period analyzed is shorter for black women than for white women. Nonetheless, given the scarcity of survey data on marriage and families over the course of a half century, the benefits of using the IFSS data nonetheless far outweigh the limitations.

In all, the pooled surveys include 56,492 ever-married women; 192 first marriages, or 0.34%, were missing start dates and were dropped from the analytic sample. Marriages with missing start dates were distributed across survey years; missingness was not meaningfully linked with any independent variables, as there were no strong associations or apparent patterns. To minimize bias related to retrospective reporting and age truncation, we limit

analyses to marriages occurring within the fifteen years prior to the survey in which they were reported (n=36,998) to capture marriages that were fairly recent at the time of survey. Even with this restriction, marriages to women age 30 and over are underrepresented in our sample relative to population levels because of the age restrictions of the surveys and truncation of observations in years before the survey. Thus, results are weighted toward the experience of women who marry before age 30. This bias is likely to be more problematic for our analyses of fertility among black women than white women, for whom marriage rates, the proportion married, and the age at marriage have remained more steady and similar over time (Isen & Stevenson, 2011). In descriptive statistics, we distinguish between marriages at ages 25–29 and marriages to women age 30 and over, but our multivariate models combine these two groups.

Because of changing race-ethnic categorizations across surveys, we exclude 1,048 marriages to women of other (non-white and non-black) racial and ethnic groups. We also exclude marriages to Hispanic women (n=2,213) because sample sizes in the early years are too small for robust analysis. As noted above, while the GAF and NFS surveys do not measure Hispanic ethnicity, they include both Hispanic and non-Hispanic respondents. For these surveys, we analyze Hispanic and non-Hispanic respondents together. In the 1973 NSFG, the first survey that measured Hispanic ethnicity, less than 3% of the sample identified as Hispanic, and the Hispanic population was likely smaller in the earlier surveys. In sensitivity tests, we compared trends for marriage cohorts for which we had data from multiple sources, some of which identified Hispanics: the marriage cohorts of 1955–1969 using data from the 1973 and 1976 NSFGs (excluding Hispanics) and data from the 1965 and 1970 NFS (including Hispanics). There were no statistically or substantively significant differences across these data sources, suggesting that combining Hispanic and non-Hispanic respondents in the earliest surveys is unlikely to distort results.

Of the eligible sample, 344 cases, or 1.02%, were missing data on the marriage end date, race, age at marriage, or education. (No cases were missing data on premarital fertility.) We applied listwise deletion and dropped these cases. Missing data is slightly more common among black women than among white women and among women in the lowest education category; there is no clear association between age at marriage or marriage cohort and missingness. Listwise deletion produces unbiased results when missingness is not dependent on the outcome variable (Allison, 2001). Although it is impossible to fully test for this dependence, because some cases are missing on the outcome, listwise deletion is robust to violations of assumptions (Allison, 2001). Thus, this approach is appropriate when statistical power is not a concern, as is the case here given the very low levels of missing data and our very large sample. Our final analytic sample consists of 33,111 first marriages to 25,159 white women and 7,952 black women.

We analyze trends in the timing of marital fertility across 11 marriage cohorts spanning the 20th century from the Baby Boom onwards: 1940–1949; 1950–54; 1955–59; 1960–64; 1965–69; 1970–74; 1975–79; 1980–84; 1985–89; 1990–95; and 1995–2002. Most cohorts are five-year cohorts; the first and last cohorts are slightly longer because of the timing of the earliest and latest surveys and because of small sample size in the earliest marriage cohorts. Timing of marital fertility is defined as the duration elapsed between the date of

first marriage and the first birth within the marriage (regardless of the parity of the birth with respect to the woman's reproductive career). All IFSS component surveys collect complete fertility histories, and less than one percent of births reported have missing dates. Following most studies on premarital conceptions, we categorize births that took place within seven months of the marriage start date as premaritally conceived.

All analyses are conducted separately for white and black women. Models with controls also incorporate age at marriage, educational attainment, and premarital childbearing; unfortunately, measures of other relevant characteristics, including cohabitation history, employment history, and family income, are not available in all of the component surveys. Age at marriage is taken directly from the IFSS harmonized variable and categorized as follows: under 18, 18–19, 20–24, 25–29, and 30 or over. Educational attainment is measured at the time of the survey. While this measure may not accurately represent attainment at the time of marriage, because of strong norms about role conflict and the sequencing of marriage and education in the United States, we expect that the error introduced by measuring education at the time of survey rather than the time of marriage is minimal (Schwarz & Mare, 2012). The IFSS harmonized variable reports educational attainment as years of schooling. This variable was based on original variables in the component surveys that also measured years of schooling; in some of the original data, responses were reported as a range (e.g., elementary school; some college). Based on this measure, we created four education categories: no high school degree (less than 12 years), high school degree only (12 years), some college education (more than 12 but less than 16 years), and bachelor's degree or higher (16 or more years). Finally, we measure premarital fertility as a linear variable for number of children born before marriage. We also tested a dichotomous measure of any birth before marriage vs. no birth before marriage and a measure taking into account the timing of premarital births (whether the respondent reported a birth in the year prior to her first marriage). There were minimal substantive differences across models using these three measures; because the linear measure of parity provided marginally better model fit, we present this measure in final models.

Methods and analytic approach

We begin with descriptive analyses presenting the distribution of early and late childbearing in first marriages for white and black women. We used life table methods to estimate the proportion of marriages in which a child is born (1) in the first seven months (i.e., the proportion of marriages that begin with a premarital conception); (2) in the first two years; and (3) in the first five years. We chose the two-year and five-year intervals because preliminary analyses showed that two years was approximately the median first birth interval across cohorts and five years was approximately the point at which first birth hazards plateaued. Life table methods use the sample of marriages observed at a specified set of intervals to calculate birth rates in each of these intervals. That is, birth rates in the first seven months of marriage are calculated based on all marriages observed for the first seven months, birth rates for months 8–12 are calculated for all marriages observed for at least 12 months in which a birth did not occur by eight months, and so on. The life table thus accounts for the censoring (by marital dissolution or the interview date) before the first marital birth. Interval-specific birth rates are then aggregated to construct the average timing

of first birth for an “artificial cohort” of marriages assumed to follow the calculated birth rates for each interval. Based on exploratory analyses, we defined intervals as 0–7 months, 8–12 months, 13–24 months, 25–36 months, and 37 months or more. We also briefly describe changes in the distribution of age at marriage, education, and premarital childbearing in marriage cohorts over the second half of the 20th century.

We next estimated continuous time event history models (also known as Cox models or proportional hazard models) predicting the first birth within marriage, separately for white and black women. These models account for censoring of marriages by marital dissolution or the survey date and allow for formal significance tests of differences across cohorts. Cox models assume that the risk of an event for any individual depends on two factors: an underlying, duration-dependent risk and the individual’s values on a set of covariates (Allison, 1995; Cox, 1972; Singer & Willett, 2003). The models do not require specifying the shape of the hazard curve and do not produce estimates for duration. Instead, duration is implicit in these models and directly incorporated into the hazard function, which is completely flexible and can take any form depending on the underlying data. The trade-off for this flexibility is that the models assume proportional hazards. That is, effects of covariates estimated by Cox models are assumed to be constant at all marriage durations. However, this assumption is easily relaxed by incorporating interactions between duration and covariates of interest. Because the baseline hazard is implicit in the model, it is not necessary to include main effects for the duration variables. Given our interest in changes in the timing of marital fertility, we estimated models allowing for interactions between marriage cohort and time since marriage to relax the proportionality assumption and allow the shape of the underlying hazard curve to vary over marriage cohort. As above, we specified duration as a set of intervals: 0–7 months, 8–12, 13–24 months, and 25–36 months. These interactions assess whether time trends in fertility in each of the specified intervals are different from those in the reference category, 37 months or more; these intervals were chosen based on the results of preliminary descriptive analyses. Models also incorporated age at marriage, education, and premarital fertility to examine whether changes in the composition of marriage cohorts help to account for change in the timing of marital fertility. In exploratory analyses, we tested three-way interactions between marriage cohort, time since marriage, and education to assess whether changes in the timing of marital fertility differed across levels of educational attainment. We found no evidence of education-specific trends in the timing of marital fertility. Our final models thus do not include three-way interactions.

Results

Table 2 shows the proportion of marriages in which women reported a birth within 7 months (a premarital conception), 2 years, and 5 years. These proportions are generated from life table estimates. Two overall patterns are apparent. First, cumulative proportions reporting a birth after two and five years of marriage declined over the second half of the twentieth century for both white and black women. In the 1955–59 marriage cohort, the cohort with the highest fertility, an estimated 89% of white women and 83% of black women would have given birth within five years of their first marriage if exposed to the observed rates for that period of time. By the late 1990s marriage cohorts, this figure had declined substantially

to 68% for white women and 59% for black women. For black women, birth rates fell in the very early stages of marriage as well – the proportion of marriages with births in the first seven months declined for much of the period of observation, although there appears to have been a slight uptick in the 1990s. In contrast, the proportion of white women's marriages that began with a premarital conception increased during the 1950s and early 1960s and remained essentially stable for the rest of the century.

Second, for the most part, trends were similar for white and black women. The cumulative proportion of women reporting a birth after two years of marriage was slightly higher for black women than for white women for much of the century, but a decline in birth rates is apparent in all marriages. Both levels and trends in the proportion of women experiencing a birth within the first five years of marriage were very similar for the two racial groups. Again, fertility in the first seven months of marriage is an exception to this pattern. The proportion of marriages that began with a premarital conception was substantially higher for black women than for white women in the 1950s and 1960s marriage cohorts. For example, 24% of marriages to black women in the period 1955–59 began with a premarital conception, compared to only 7% of marriages to white women. This proportion declined for black women and increased for white women; by the late 1980s, the black-white difference in early marital fertility was small.

Figures 1 and 2 present hazard rates for marital fertility for white and black women, respectively, by marriage cohort over the second half of the twentieth century. Hazard rates are generated from life tables as described above. In both figures, the light grey lines represent marriage cohorts from the 1940s and 1950s; the dark grey lines represent marriage cohorts from the 1960s and 1970s, and the black lines represent marriages cohorts from the 1980s and 1990s; the solid lines are the earliest cohort in each of these groupings.

These figures are largely consistent with the cumulative proportions experiencing a birth shown in Table 2. For white women, early cohorts showed a sharp peak in hazards in the first and second year of marriage, i.e., a strong pattern of birth timing shortly after marriage (Figure 1). This peak flattened out by the 1970s marriage cohorts; birth hazards for the later cohorts were essentially stable after the first seven months of marriage. This suggests, then, that over the latter half of the 20th century, the link between transitioning to marriage and transitioning to a first birth within marriage weakened among white women. Unlike earlier cohorts, who began having children almost immediately after marrying, white women who married in the 1970s or later exhibited far more variation in the timing of transition to a marital first birth.

For black women, birth hazards declined at all marital durations during the period under study (Figure 2). There is some evidence of a flattening of the hazard curves for black women as well, but the pattern is less clear. Because sample sizes are smaller for marriages reported by black women than by white women, there is more fluctuation in hazard rates both across marriage cohorts and over the duration of marriage. This fluctuation makes it more difficult to discern patterns. In the early cohorts (1955–59, 1960–64), when the sharp peak in birth hazards is most apparent, the decline in hazards after the peak in the first year of marriage was larger and more rapid for black women than for white women. Combined

with the higher fertility of black women than white women in the first seven months of marriage in these cohorts, this pattern suggests that the timing of marriage was even more closely linked to childbearing among black women than among white women. Put differently, among the earlier cohorts of black women marrying for the first time, entrance into marriage strongly coincided with entry into parenthood, with many women pregnant at the time of marriage or shortly thereafter. The sharp association between entry into marriage and into parenthood dissipated rapidly across subsequent cohorts, indicating that marriage and fertility have become increasingly decoupled among black women even as marriage has become more selective.

Changes in the timing of marital births may stem from the changing characteristics of women who marry. Figures 3a–3c and 4a–4c show changes over the second half of the twentieth century in the composition of white and black marriage cohorts with respect to age, education, and premarital fertility. These changes are consistent with previous research and thus are described only briefly here. The age distribution of first marriage shifted substantially upwards. The educational attainment of married women also increased over the period of observation. This shift was driven both by the increase in education for all women and by the increasing education gradient in marriage rates. That is, there were more educated women in the population overall, and more educated women became increasingly more likely to get married than less educated women, producing a large increase in the educational attainment of married women. The proportion of women entering first marriage with children, as well as the number of children born before marriage, increased steadily for both white and black women. However, levels were much higher for black women than for white women across all cohorts. The proportion of women with two or more children also rose throughout the period; this increase was proportionally larger for whites, but larger in absolute terms for blacks.

Results from continuous time models predicting the hazard of first birth are shown in Table 3. These models assess whether the descriptive patterns shown in Figures 1 and 2 persist when accounting for compositional change and test the statistical significance of these patterns. As described in the methods section, interactions were included for the first 7 months of marriage; months 8–12; months 13–24; and months 25–36. The omitted category is marriage durations longer than 36 months. The main effect for marriage cohort in these models measures time trends in the omitted interval, while interactions assess the degree to which time trends vary by marriage duration, i.e., whether the timing as well as the level of marital fertility has changed. Because Cox models do not specify a functional form for the hazard curve, main effects for duration are not included in the models.

For white women, results are largely consistent with descriptive results. The coefficients for the main effects of marriage cohort are small in magnitude and not statistically different from zero. That is, at longer durations (after 36 months of marriage), change over time in the hazards of the first marital birth is accounted for by changes in the age, educational attainment, and premarital childbearing of women who marry. However, most of the cohort-duration interaction coefficients are statistically significant, and model fit statistics (not shown) indicate that model fit is significantly improved by including these interaction terms. Compositional changes thus did not account for the changing timing of births in the first

three years of marriage. The positive interactions for the first 7 months of marriage for marriage cohorts after 1960 confirm that the increases in premaritally conceived marital births are statistically significant (with the exception of the most recent cohort, $p=.09$). Similarly, the cohort-marriage duration interactions for the 8–12 and 13–24 month intervals were negative in sign, large in magnitude, and statistically significant, consistent with the increased postponement of first marital births beyond the third year of marriage observed in Table 2 and Figure 1.

For black women, not all patterns observed in the descriptive results are statistically significant. As for white women, cohort main effects are not statistically different from zero, indicating that changes in birth rates at marital durations longer than 36 months are accounted for by controlling for age, educational attainment, and premarital childbearing. Interactions for all of the first three intervals (0–7 months, 8–12 months, 13–24 months) were negative in sign, and some were reasonably large in magnitude, but not all interactions are statistically significant. The pattern of change in the first three years of marriage was more consistent for black women than for white women; there was no corresponding increase in premaritally conceived births.

Compositional characteristics – age at marriage, education, and premarital fertility – were associated with marital fertility in a manner consistent with prior research. Younger wives had higher birth hazards and older wives had lower birth hazards than women who marry in their early 20s. College education was negatively associated with marital fertility rates relative to high school education; for white women, having less than a high school degree was positively associated with birth rates. For both white and black women, parity at marriage was negatively associated with birth rates in marriage. Comparisons with models excluding sociodemographic controls (not shown) indicate that compositional changes account for more of the change in timing of marital births for black women than for white women. This implies greater selectivity into marriage across cohorts for black women than white women, with the changes in age, education, and prior fertility explaining a greater proportion of the decline in the risk of transition to a marital birth, particularly in the first years of marriage.

Discussion and conclusions

Discussion

In the second half of the 20th century, the U.S. family system was marked by a weakening of normative and behavioral links between marriage and childbearing as the social institution of marriage has evolved, economic opportunities have grown for women, and family planning options have improved. Evidence of these weakening links has been drawn largely from research showing increased rates of childbearing outside of marriage. This paper fills an important gap in both the marriage and fertility literatures by turning empirical attention to the question of changing rates and timing of marital fertility.

Our results show that marital fertility rates began to decline for the marriage cohorts of the late 1960s and continued to decrease throughout the twentieth century. These declines were concentrated during the first three years of marriage. For women who married during the

1960s, there was a sharp peak in birth hazards shortly after marriage, i.e., marriage and childbearing were closely sequenced. The marriage cohorts of the 1980s and 1990s, in contrast, did not experience this early rise in marital fertility. Marriage and fertility were less closely linked temporally for these cohorts, suggesting that they might also be less closely linked in terms of their social meaning. The close sequencing of marriage and childbearing in the early cohorts is consistent with the idea that marriage was largely synonymous with raising a family. The increasing disconnect in the timing of marriage and entry into parent in later cohorts, conversely, implies that meaning of marriage has shifted away, at least partially, from an emphasis on having and raising children. Somewhat surprisingly, we found no evidence of increased fertility early in marriage beyond the impact of premaritally conceived births. Marriage in the United States still takes place at relatively young ages compared to some countries in Western Europe. If age at marriage continue to increase and approach the ages at which women's fecundity begins to decline, biological pressures may contribute to a rise in short birth intervals. It is also possible that we would find more evidence of rising fertility early in marriage with a sample that better represented the experience of women who marry in their thirties and forties.

For white women, overall declines in marital fertility rates were accompanied by increases in fertility during the first seven months of marriage – that is, an increasing proportion of marriages followed a premarital conception. At the same time, the proportion of couples that marry after a nonmarital conception has declined (England, Shafer, & Wu, 2012; Hoelter, Leclerc, & Smock, 2008; Raley, 2001). Although declines in marital fertility emerged in the 1960s, corresponding with the introduction of the birth control pill, the continued decline across subsequent cohorts, combined with the increase in premarital conceptions, suggests the mere availability of birth control is not enough to fully explain the trend.

Rather, these findings suggest a complex evolution in the social meaning of marriage. Marriage is no longer the only possible setting for bearing and raising children, and fewer couples view marriage as a necessary response to a nonmarital conception. Yet at the same time, the legal and social gains to marriage may be greater for couples with children. For childless couples, marriage adds relatively little to the emotional intimacy, access to sex, and sharing of economic costs provided by dating or cohabiting relationships (but see Cherlin (2004) for a discussion of possible benefits of marriage). Once couples have children, marriage does confer distinctive legal rights and social responsibility for both parents and children. These conditions, in conjunction with a rising number of conceptions outside marriage either to cohabiting couples or to couples not living together, produce a pattern of more marriages beginning with a conception even as fewer conceptions lead to marriage. Cohabitation likely plays a role here; the existence of this pattern for white, but not black, women is consistent with other work showing that pregnant white cohabiters are more likely to transition to marriage prior to birth than other groups (Lichter, 2012).

For black women, declines in marital fertility were experienced across all durations, including the first seven months, and the proportion of marriages begun with a premarital conception did not increase. This difference in trends between white and black marriages is largely driven by different starting points: Relative to white women, black women had much higher birth rates in the first seven months of marriage during the 1960s marriage cohorts.

Current rates and timing of marital fertility are strikingly similar for white and black women. This is all the more striking given that marriage is much more selective, and rare, for blacks than whites in more recent cohorts. In contrast, race-ethnic differences in nonmarital fertility and in marriage rates continue to be substantial (Furstenberg, 2009; Smock & Greenland, 2010). Our findings lend additional support to the possibility that the growing diversity in family formation behavior in the United States is concentrated among unmarried individuals, and especially in the process of selection into marriage, while the behavior of married individuals may be converging across different race-ethnic groups.

The changing composition of marriage cohorts accounts for some of the change in overall marital fertility rates, but does little to account for change over time in the timing of marital fertility. This finding might seem surprising, given the extensive evidence of differential change in family formation behavior across education strata. It is perhaps to be expected, however, given our focus on behavior *within* marriage. Our analyses take marriage as a starting point; we are not focusing on the mechanisms of selection and causation that drive partnership formation and the decision to formalize a relationship by marrying. Our results imply that the ramifications of changing educational gradients in family formation are concentrated in these earlier selection processes, rather than on fertility once marriage has taken place. Similarly, changes in births taking place before marriage account for relatively little of the changes in the timing of marital fertility. Thus, changes in marital fertility cannot be attributed to changes in the proportion of women who enter marriage already having completed their desired childbearing.

Instead, we argue, shifts in the timing of marital fertility are evidence of changes in the symbolic meaning of marriage. We also interpret the growing proportion of married couples remaining childless for several years after marrying as yet another piece of evidence demonstrating an ongoing, and still increasing, separation between marriage and childbearing.

Limitations

Because of the sample frames and content of the family surveys that make up the IFSS, there are some limitations to our analysis. We are unable to analyze trends for Hispanic women, and the time series for black women is shorter than the time series for white women. Since only married women are included in some datasets, we cannot empirically address selection into marriage. In addition, we do not have data on women's labor force participation at the time of marriage or the first birth, so we cannot assess the role of women's changing earning power in explaining trends in marital fertility. Further, within each survey, our sample is biased towards younger women as the length of time prior to the survey increases, although the use of several surveys over the analytical time period reduces this bias somewhat. Still, the rising age at marriage, especially among blacks, means the marriages we observe in our data represent an increasingly select group over time. It is possible that, if we were able to observe more marriages to women in their 30s and 40s, we would have observed an increase in the proportion of marriages with short durations between marriage and childbearing as "older" women face more biological constraints and pressures to have children. Despite

these limitations, the broad scope of the IFSS data allows us to describe and interpret changes in the interval between marriage and first birth over a crucial time period.

Our analysis accounts statistically for marital dissolution – women who divorce or separate are not included in measured rates. However, because we cannot observe fertility behavior among women post-divorce in the early surveys, it is difficult to speculate on the possible substantive implications of changes across time in who remains married. As divorce rates increased over the time period observed, marriage became increasingly selective of happy couples, because unhappy relationships are more likely to dissolve. Recent research from the Netherlands shows that fertility rates are highest in couples with midlevel relationship quality, with both the highest quality and lowest quality relationships having lower birth rates (Rijken & Thomson, 2010). If this association was true in earlier marriage cohorts as well, marital fertility in cohorts before the rise in divorce might have been depressed by the forced stability of unhappily married couples. Thus, our analysis would underestimate declines in marital fertility relative to the declines we would see if we could account for changes in the happiness of married couples.

On a related note, we were unable to account for any changes in pre-marriage relationship behavior. In particular, we do not know how long couples were romantically involved prior to marriage, but the increase in cohabitation prior to marriage (Kennedy & Bumpass, 2008) suggests that the overall duration of relationships prior to marriage is likely increasing across these cohorts; cohabitation seems particularly linked to marriage for whites (Smock, 2000). This, in turn, suggests that if we were able to examine total relationship durations across cohorts, the delay in fertility within relationships over time is even greater than our results suggest.

Conclusion

Despite public concern over the decline of marriage and the rise of nonmarital childbearing, marriage remains a central component of the American lifestyle. Most Americans want to marry, most do marry, and most want to raise their children within marriage. Our analysis shows a decline in marital fertility and a postponement of marital births beyond the first three years of marriage, indicating a weakening normative link between marriage and childbearing. Yet we also found that marriages following a premarital conception make up an increasing proportion of marriages for white women, indicating a continued link between these behaviors for some subsets of the population.

Changes in marital births may, in turn, have implications for marital stability. Research on marriage in the 1970s and 1980s found that shared biological children are positively associated with marital stability (Cherlin, 1977; Heaton, 1990; Lillard & Waite, 1993); therefore, delays and declines in marital fertility may lead to fewer ties linking married couples together. At the same time, among couples with children, delayed childbearing within marriage is associated with greater stability relative to shorter intervals between marriage and the first birth (Wineberg, 1988). To the extent that the findings from these studies hold for contemporary marriages, postponement of childbearing within marriage might have positive effects on marital stability for parents and, by extension, children's

well-being. It is possible, however, that the link between childbearing and marital stability has changed over time and thus needs to be re-examined.

Although we did not explicitly examine attitudes over time toward childbearing within marriage, the purpose of marriage, or the importance of children for marital success, our focus on trends in marital childbearing behaviors provides strong additional support for the argument that meaning and purpose of marriage is shifting. Couples have become less likely to transition to parenthood shortly after marriage and are instead waiting longer to become parents, if they do so at all. Delayed childbearing within marriage is consistent with the idea that people increasingly view marriage first and foremost as a relationship between two adults. Delaying having children then allows couples time to focus on the marital relationship, and this bodes well for both marriage and child well-being within marriage if it results in stronger marital – and parental – bonds. Still, continued research on behaviors within marriage, and attitudes about marriage is warranted as we continue to struggle with the changing role of marriage in American society. Additional work is also needed to understand not just the timing of first births but higher-parity fertility behaviors as well. If marriage is increasingly about the spousal relationship, couples may feel less pressure to have higher-order births, and if marriage is increasingly delayed, couples may either have to space births more closely together to reach desired family size prior to biological declines in fecundity or may stop after just one birth. Because marital fertility behaviors have implications for overall fertility levels, we encourage continued work on childbearing within marriage.

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References

- Allison, PD. Survival analysis using the SAS system: A practical guide. Cary, NC: SAS Publishing; 1995.
- Allison, PD. Missing data. Thousand Oaks, CA: Sage Publications; 2001. p. 136 Quantitative applications in the social sciences
- Arroyo J, Payne KK, Brown SL, Manning WD. Crossover in median age at first marriage and first birth: Thirty years of change. NCFMR Family Profiles FF-12-03. 2012
- Bowling Green State University. Bowling Green, OH: National Center for Family and Marriage Research; http://ncfmr.bgsu.edu/pdf/family_profiles/file107893.pdf
- Becker, GS. A treatise on the family. Cambridge, MA: Harvard University Press; 1981.
- Brewster KL, Rindfuss RR. Fertility and women's employment in industrialized nations. Annual Review of Sociology. 2000; 26:271–296.10.1146/annurev.soc.26.1.271
- Bumpass L, Lu HH. Trends in cohabitation and implications for children's family contexts in the United States. Population Studies. 2001; 54:29–41.10.1080/713779060
- Cherlin AJ. The effect of children on marital disruption. Demography. 1977; 14:265–272. [PubMed: 892110]

- Cherlin AJ. The deinstitutionalization of American marriage. *Journal of Marriage and Family*. 2004; 66:848–861.10.1111/j.0022-2445.2004.00058.x
- Cherlin, AJ. *The marriage-go-round*. New York: Knopf; 2009.
- Cherlin AJ. Demographic trends in the United States: A review of research in the 2000s. *Journal of Marriage and Family*. 2010; 72:403–419.10.1111/j.1741-3737.2010.00710.x [PubMed: 22399825]
- Cohn, D.; Passel, JS.; Wang, W.; Livingston, G. *Pew Social and Demographic Trends Report*. Washington, D.C: Pew Research Center; 2011. Barely half of U.S. adults are married – a record low.
- Cox DR. Regression models and life-tables. *Journal of the Royal Statistical Society. Series B (Methodological)*. 1972; 34(2):187–220.
- Duncan S, Phillips M. People who live apart together (LATs) – how different are they? *The Sociological Review*. 2010; 58:112–134.10.1111/j.1467-954X.2009.01874.x
- Edin, K.; Kefalas, M. *Promises I can keep: Why poor women put motherhood before marriage*. Berkeley: University of California Press; 2005.
- Elliott, DB.; Krivackas, K.; Brault, MW.; Kreider, RM. Historical marriage trends from 1890: A focus on race differences. Paper presented at the 2012 annual meeting of the Population Association of America; May 3–5; San Francisco, CA. 2012.
- Ellwood, D.; Jencks, C. The uneven spread of single-parent families: What do we know? Where do we look for answers?. In: Neckerman, K., editor. *Social inequality*. New York: Russell Sage; 2004. p. 3–78.
- England P, Shafer EF, Wu LL. Premarital conceptions, postconception (shotgun) marriages, and premarital first births: Education gradients in U.S. cohorts of white and black women born 1925–1959. *Demographic Research*. 2012; 27:153–166.10.4054/DemRes.2012.27.6
- Fitch, CA.; Kennedy, S.; Oakes, JM.; Ruggles, S. Marriage formation and economic opportunity in the United States: 1970–2000. Paper presented at the Annual Meeting of the Population Association of America; May 3–5; San Francisco, CA. 2012.
- Fitch, CA.; Ruggles, S. Historical trends in marriage formation: The United States, 1850–1990. In: Waite, LJ., editor. *The ties that bind: Perspectives on marriage and cohabitation*. Hawthorne, NY: Aldine de Gruyter; 2000. p. 59–90.
- Furstenberg FF Jr. The future of marriage. *American Demographics*. 1996 Jun.:33–40.
- Furstenberg FF Jr. If Moynihan had only known: Race, class, and family change in the late twentieth century. *Annals of the American Academy of Political and Social Science*. 2009; 621:94, 110.10.1177/0002716208324866
- Fry, R. The reversal of the college marriage gap. *A Social and Demographic Trends Report*. Washington, D.C: Pew Research Center; 2010.
- Gibson-Davis CM. Mothers but not wives: The increasing lag between nonmarital births and marriage. *Journal of Marriage and Family*. 2012; 73:264–278.10.1111/j.1741-3737.2010.00803.x
- Gibson-Davis CM, Edin K, McLanahan S. High hopes but even higher expectations: The retreat from marriage among low-income couples. *Journal of Marriage and Family*. 2005; 67:1301–1312.10.1111/j.1741-3737.2005.00218.x
- Goldin C, Katz LF. The Power of the Pill: Oral Contraceptives and Women's Career and Marriage Decisions. *Journal of Political Economy*. 2002; 110:730–770.10.1086/340778
- Goldstein JR, Kenney CT. Marriage delayed or marriage forgone? New cohort forecasts of first marriage for U.S. women. *American Sociological Review*. 2001; 66:506–519.10.2307/3088920
- Graefe DR, Lichter DT. Marriage patterns among unwed mothers: Before and after PRWORA. *Journal of Policy Analysis and Management*. 2008; 27:479–497.10.1002/pam.20352
- Griffith JD, Koo HP, Suchindran CM. Childbearing and family in remarriage. *Demography*. 1985; 22:73–88.10.2307/2060987 [PubMed: 3979617]
- Hayford SR. Marriage (still) matters: The contribution of demographic change to trends in childlessness in the United States. *Demography*. 2013; 50:1641–1661.10.1007/s13524-013-0215-3 [PubMed: 23595495]
- Heaton TB. Marital stability throughout the child-rearing years. *Demography*. 1990; 27:55–64.10.2307/2061552 [PubMed: 2303141]

- Hoelter, LF.; LeClere, FB.; Smock, PJ. Historical change in legitimation of first births: 1920–2002. Paper presented at the Population Association of America Annual Meetings. Integrated Fertility Survey Series; 2008. <http://www.icpsr.umich.edu/icpsrweb/IFSS/>
- Isen, A.; Stevenson, B. Women's education and family behavior. In: Shoven, J., editor. *Demography and the Economy*. Chicago: The University of Chicago Press; 2011. p. 107-142.
- Kennedy S, Bumpass L. Cohabitation and children's living arrangements: New estimates from the United States. *Demographic Research*. 2008; 19:1663–1692.10.4054/DemRes.2008.19.47 [PubMed: 19119426]
- Lesthaeghe RJ. The unfolding story of the second demographic transition. *Population and Development Review*. 2010; 36:211–251.10.1111/j.1728-4457.2010.00328.x [PubMed: 20734551]
- Lichter DT. Childbearing among cohabiting women: Race, pregnancy, and union transitions. *Early Adulthood in a Family Context*. 2012; 2:209–219.10.1007/978-1-4614-1436-0_13
- Lillard L, Waite L. A joint model of marital childbearing and marital disruption. *Demography*. 1993; 30:653–681.10.2307/2061812 [PubMed: 8262286]
- Livingston, G.; Cohn, D. *Pew Social & Demographic Trends Report*. Washington, D.C: Pew Research Center; 2010. Childlessness up among all women: Down among women with advanced degrees.
- Manning WD, Smock PJ. First comes cohabitation and then comes marriage? A research note. *Journal of Family Issues*. 2002; 23:1065–1087.10.1177/019251302237303
- Manning WD, Longmore MA, Giordano PC. The changing institution of marriage: Adolescents' expectations to cohabit and marry. *Journal of Marriage and Family*. 2007; 69:559–575.10.1111/j.1741-3737.20
- Martin, SP. Women's education and family timing: Outcomes and trends associated with age at marriage and first birth. In: Neckerman, K., editor. *Social inequality*. Vol. Chapter 2. New York: Russell Sage; 2004.
- Martin, JA.; Hamilton, BE.; Ventura, SJ.; Osterman, MJK.; Mathews, TJ. *National Vital Statistics Reports*. Vol. 62. Hyattsville, MD: National Center for Health Statistics; 2013. Births: Final data for 2011.
- McLanahan S. Diverging destinies: How children fare under the Second Demographic Transition. *Demography*. 2004; 41:607–627.10.1353/dem.2004.0033 [PubMed: 15622946]
- Meggiolaro S, Ongaro F. The implications of marital instability for a woman's fertility: Empirical evidence from Italy. *Demographic Research*. 2011; 23:963–996.10.4054/DemRes.2010.23.34
- Menken J, Trussell J, Larsen U. Age and Infertility. *Science*. 1986; 223:1389–1394.10.1126/science.3755843 [PubMed: 3755843]
- Payne, KK. Timing of first marital birth. National Center for Marriage and Family Research; 2012. p. FP-12-11 http://ncfmr.bgsu.edu/pdf/family_profiles/file114148.pdf
- Pew Research Center. *The decline of marriage and the rise of new families*. Washington, D.C: Pew Research Center; 2010.
- Raley RK. Increasing fertility in cohabiting unions: evidence for the second demographic transition in the United States? *Demography*. 2001; 38:59–66.10.1353/dem.2001.0008 [PubMed: 11227845]
- Raley RK, Bumpass LL. The topography of the divorce plateau: Levels and trends in union stability in the United States After 1980. *Demographic Research*. 2003; 8:245–60.10.4054/DemRes.2003.8.8
- Rijken AJ, Thomson E. Partners' relationship quality and childbearing. *Social Science Research*. 2011; 40:485–497.10.1016/j.ssresearch.2010.10.001
- Rindfuss RR, Parnell AM. The varying connection between marital status and childbearing in the United States. *Population and Development Review*. 1989; 15:447–470.10.2307/1972442
- Schwarz CR, Mare RD. The proximate determinants of educational homogamy: The effects of first marriage, marital dissolution, remarriage, and educational upgrading. *Demography*. 2012; 49:629–650. [PubMed: 22450676]
- Shanahan MJ. Pathways to adulthood in changing societies: Variability and mechanisms in life course perspective. *Annual Review of Sociology*. 2000; 26:667–692.10.1146/annurev.soc.26.1.667
- Smock PJ. Cohabitation in the United States: An appraisal of research themes, findings, and implications. *Annual Review of Sociology*. 2000; 26:1–20.10.1146/annurev.soc.26.1.1

- Smock PJ, Greenland FR. Diversity in pathways to parenthood in the U.S.: Patterns, implications, and emerging research directions. *Journal of Marriage and Family*. 2010; 72:576–593.
- Stevenson B, Wolfers J. Marriage and Divorce: Changes and their Driving Forces. *The Journal of Economic Perspectives*. 2007; 21:27–52.10.1257/jep.21.2.27
- Strohm C, Seltzer J, Cochran S, Mays V. ‘Living Apart Together’ relationships in the United States. *Demographic Research*. 2009; 21:177–214.10.4054/DemRes.2009.21.7 [PubMed: 21566723]
- Thomson E. Step-families and childbearing desires in Europe. *Demographic Research, Special Collection*. 2004; 3:117–134.10.4054/DemRes.2004.S3.5
- Thomson, E.; Hoem, JM.; Vikat, A.; Buber, I.; Fuernkranz-Prskawetz, A.; Toulemon, L.; Kantorova, V. Childbearing in stepfamilies: Whose parity counts?. In: Klijzing, E.; Corijn, M., editors. *Dynamics of fertility and partnership in Europe: Insights and lessons from comparative research*. Vol. II. Geneva and New York: United Nations; 2002. p. 87-99.
- Thornton A, Young-DeMarco L. Four decades of trends in attitudes toward family issues in the United States: The 1960s through the 1990s. *Journal of Marriage and Family*. 2001; 63:1009–1037.10.1111/j.1741-3737.2001.01009.x
- Thornton, A.; Axinn, WG.; Xie, Y. *Marriage and cohabitation*. Chicago: The University of Chicago Press; 2007.
- van de Kaa DJ. Europe’s second demographic transition. *Population Bulletin*. 1987; 42:1–59. [PubMed: 12268395]
- Westoff CF. The yield of the imperfect: the 1970 National Fertility Study. *Demography*. 1975; 12:573–580.10.2307/2060714 [PubMed: 1213212]
- Wineberg H. Duration between marriage and first birth and marital instability. *Biodemography and Social Biology*. 1988; 35:91–102.10.1080/19485565.1988.9988691

Figure 1.

Hazard rates of first birth within first marriage, white women in U.S. marriage cohorts
 Data: Fertility surveys from 1955–2002 harmonized by the IFSS project. N=25157 marriages with non-missing dates of marriage and first birth in the 15 years prior to each survey. Surveys before 1973 combine Hispanic and non-Hispanic respondents; in surveys after 1973, Hispanic respondents are excluded from analysis. Life table estimates.

Figure 2.

Hazard rates of first birth within first marriage, black women in U.S. marriage cohorts
 Data: Fertility surveys from 1955–2002 harmonized by the IFSS project. N=7951 marriages with non-missing dates of marriage and first birth in the 15 years prior to each survey. Surveys before 1973 combine Hispanic and non-Hispanic respondents; in surveys after 1973, Hispanic respondents are excluded from analysis. Life table estimates.

Figure 3.

Figures 3a, 3b, 3c. Changing age, education, and parity composition of U.S. marriage cohorts, white women.

Data: Fertility surveys from 1955–2002 harmonized by the IFSS project. N=25157 marriages with non-missing dates of marriage and first birth in the 15 years prior to each survey. Surveys before 1973 combine Hispanic and non-Hispanic respondents; in surveys after 1973, Hispanic respondents are excluded from analysis.

Figure 4.

Figures 4a, 4b, 4c. Changing age, education, and parity composition of U.S. marriage cohorts, black women.

Data: Fertility surveys from 1955–2002 harmonized by the IFSS project. N=7951 marriages with non-missing dates of marriage and first birth in the 15 years prior to each survey. Surveys before 1973 combine Hispanic and non-Hispanic respondents; in surveys after 1973, Hispanic respondents are excluded from analysis.

Table 1

IFSS surveys, sampling frames, and sample sizes

Survey	Sample frame	N (women)
GAF: 1955	Currently married white women, age 18–39	2713
GAF: 1960	Currently married white women, age 18–39; previously married white women (married in 1955), age 23–44; married non-white women, age 18–39	3256
NFS: 1965	Currently married women, age 18–54; black women oversampled	5617
NFS: 1970	Ever-married women, age 18–44; black women oversampled	6752
NSFG: 1973	Ever-married women and single women with children in household, age 15–44; black women oversampled	9797
NSFG: 1976	Ever-married women and single women with children in household, age 15–44; black women oversampled	8611
NSFG: 1982	Women, age 15–44; black and teenage women oversampled	7969
NSFG: 1988	Women, age 15–44; black women oversampled	8450
NSFG: 1995	Women, age 15–44; black and Hispanic women oversampled	10847
NSFG: 2002	Women, age 15–44; black, Hispanic, and teenage women oversampled	7643

GAF: Growth of American Families; NFS: National Fertility Survey; NSFG: National Survey of Family Growth.

Table 2

Changing timing of first marital birth for U.S. marriage cohorts

Cumulative proportion of marriages with first birth within:				
Cohort	N	7 months	2 years	5 years
Marriages to white women				
1940–49	2241	0.03	0.58	0.84
1950–54	1983	0.03	0.61	0.86
1955–59	2474	0.07	0.68	0.89
1960–64	3613	0.09	0.65	0.87
1965–69	4084	0.11	0.52	0.81
1970–74	3374	0.11	0.41	0.72
1975–79	1604	0.09	0.36	0.68
1980–84	2002	0.10	0.39	0.70
1985–89	1498	0.10	0.36	0.69
1990–94	1353	0.10	0.37	0.66
1995–2002	933	0.09	0.35	0.68
Marriages to black women				
1940–49	not observed			
1950–54				
1955–59	595	0.24	0.67	0.83
1960–64	1371	0.23	0.68	0.83
1965–69	1718	0.23	0.60	0.77
1970–74	1742	0.20	0.55	0.79
1975–79	724	0.15	0.47	0.73
1980–84	733	0.17	0.49	0.69
1985–89	464	0.11	0.39	0.64
1990–94	367	0.12	0.28	0.50
1995–2002	238	0.16	0.46	0.59

Data: Fertility surveys from 1955–2002 harmonized by the IFSS project; see text for list of surveys. Marriages with non-missing dates of marriage and first birth in the 15 years prior to each survey. Surveys before 1973 combine Hispanic and non-Hispanic respondents; in surveys after 1973, Hispanic respondents are excluded from analysis. Life table estimates accounting for censoring of observations.

Table 3

Continuous time hazard models predicting first birth in first marriage

	White women		Black women	
	b	se	b	se
Year of marriage				
1940–49	–0.10	0.08	<i>not observed</i>	
1950–54	–0.05	0.07		
1955–59 (omitted)				
1960–64	0.05	0.08	0.06	0.19
1965–69	0.10	0.07	–0.04	0.20
1970–74	–0.09	0.09	0.02	0.19
1975–79	–0.06	0.09	0.20	0.19
1980–84	0.00	0.08	0.14	0.22
1985–89	0.04	0.09	–0.09	0.25
1990–94	0.04	0.10	0.11	0.28
1995–2002	–0.04	0.12	0.02	0.36
Interactions: marriage duration x year of marriage				
0–7 months x:				
1940–49	–0.56	0.13***	<i>not observed</i>	
1950–54	–0.60	0.13***		
1955–59 (omitted)				
1960–64	0.27	0.11*	–0.15	0.22
1965–69	0.33	0.11**	–0.03	0.24
1970–74	0.48	0.11***	–0.27	0.23
1975–79	0.36	0.14**	–0.65	0.24**
1980–84	0.40	0.11***	–0.38	0.27
1985–89	0.37	0.13**	–0.43	0.31
1990–94	0.44	0.15**	–0.54	0.34
1995–2002	0.44	0.23*	0.00	0.41
8–12 months x:				
1940–49	–0.17	0.10 ⁺	<i>not observed</i>	
1950–54	–0.09	0.09		
1955–59 (omitted)				
1960–64	–0.19	0.10 ⁺	0.01	0.24
1965–69	–0.65	0.09***	–0.26	0.26
1970–74	–1.01	0.12***	–0.30	0.24
1975–79	–1.24	0.15***	–0.61	0.26*
1980–84	–1.05	0.13***	–0.51	0.29 ⁺
1985–89	–1.11	0.14***	–0.46	0.35
1990–94	–1.27	0.16***	–0.99	0.37**
1995–2002	–1.18	0.19***	–0.12	0.47

	White women		Black women	
	b	se	b	se
13–24 months x:				
1940–49	–0.18	0.09 ⁺	<i>not observed</i>	
1950–54	–0.14	0.09		
1955–59 (omitted)				
1960–64	–0.22	0.10*	–0.06	0.24
1965–69	–0.64	0.09***	–0.04	0.23
1970–74	–0.77	0.10***	–0.36	0.22 ⁺
1975–79	–0.82	0.11***	–0.53	0.23*
1980–84	–0.80	0.11***	–0.26	0.25
1985–89	–0.87	0.11***	–0.30	0.30
1990–94	–0.76	0.13***	–1.17	0.35***
1995–2002	–0.60	0.15***	0.02	0.39
25–36 months x:				
1940–49	–0.21	0.12 ⁺	<i>not observed</i>	
1950–54	–0.12	0.11		
1955–59 (omitted)				
1960–64	–0.24	0.11*	–0.37	0.33
1965–69	–0.40	0.11***	–0.23	0.31
1970–74	–0.53	0.13***	–0.10	0.31
1975–79	–0.49	0.14***	–0.34	0.31
1980–84	–0.43	0.12***	–0.51	0.34
1985–89	–0.49	0.13***	0.10	0.38
1990–94	–0.41	0.14**	–0.54	0.37
1995–2002	–0.24	0.18	–0.67	0.67
Sociodemographic controls				
Age at marriage				
Under 18	0.42	0.03***	0.47	0.06***
18–19	0.24	0.02***	0.27	0.05***
20–24 (omitted)				
25 or over	–0.21	0.03***	–0.58	0.06***
Education				
No h.s. degree	0.16	0.03***	–0.05	0.05
H.s. degree (omitted)				
Some college	–0.12	0.02***	–0.12	0.06*
B.A. or higher	–0.37	0.03***	–0.17	0.06**
Parity at marriage	–0.12	0.05**	–0.18	0.03***
–2 log likelihood	398408		28081	

Data: Fertility surveys from 1955–2002 harmonized by the IFSS project. N=25157 marriages to white women and 7951 marriages to black women with non-missing dates of marriage and first birth in the 15 years prior to each survey. Surveys before 1973 combine Hispanic and non-Hispanic

respondents; in surveys after 1973, Hispanic respondents are excluded from analysis. Results are from Cox regression models with non-parametric baseline hazards.